

VECTOR RANGE – 1550 & 1550 City / 1950 & 1950 Mt° - OPERATING INSTRUCTIONS

INTRODUCTION

This guide has been prepared for the operator of Carrier Transicold refrigeration units. It contains basic instructions for the daily operation of the refrigeration unit as well as safety information, troubleshooting tips, and other information that will help you to deliver the load in the best possible condition.

Please take the time to read the information contained in this booklet and refer to it whenever you have a question about the operation of your Carrier Transicold unit. This manual refers to the standard model. Some options may not appear in it, and in such cases you are requested to consult our Technical Services.

Your refrigeration unit has been engineered to provide long, trouble-free performance when it is properly operated and maintained. The checks outlined in this guide will help to minimize on the road problems. In addition, a comprehensive maintenance program will help to insure that the unit continues to operate reliably. Such a maintenance program will also help to control operating costs, increase the unit's working life, and improve performance.

When having your unit serviced, be sure to specify genuine Carrier Transicold replacement parts for the highest quality and best reliability.

At Carrier Transicold, we are continually working to improve the products that we build for our customers. As a result, specifications may change without notice.

CONTENTS

1.	DESCRIPTION & IDENTIFICATION.....	4
1.1.	Nameplate	4
1.2.	Noise level sticker.....	4
2.	SAFETY	4
2.1.	Warning stickers maintenance.....	6
3.	PRODUCT LOADING	6
4.	RECOMMENDED TRANSPORT TEMPERATURES.....	7
5.	12VDC BATTERY SAVING RECOMMENDATION.....	7
6.	PRETRIP INSPECTION.....	7
7.	Description	8
7.1.	Display	8
7.2.	Auxiliary control panel	8
8.	OPERATION.....	8
8.1.	To start the unit – ROAD operation	8
8.2.	To start the unit – STANDBY operation.....	8
8.2.1.	Standby operation guideline	8
8.3.	To stop the unit.....	9
8.4.	To change operating mode.....	9
8.5.	To operate in "CITY mode" – V1550 City only.....	9
8.5.1.	CITY mode description	9
8.5.2.	CITY mode selection.....	9
8.5.3.	CITY mode activation.....	10
8.6.	To initiate manual defrost	10
8.7.	To change set point temperature.....	11
8.8.	Start-Stop operation	11
8.8.1.	Start-Stop operation – Road / Standby modes	11
8.9.	Continuous run operation	11
8.10.	Pretrip.....	12
8.11.	Trip start	12
8.12.	To display unit data	12
8.13.	To change a function	12
8.13.1.	Alarm list	13
8.14.	To operate with auxiliary control panel	14
8.14.1.	To change the set point	14
8.14.2.	To set pre-set set point	14
8.14.3.	To remove pre-set set point.....	14
8.14.4.	To lock and unlock the control panel.....	14
9.	MAINTENANCE	14
9.1.	Maintenance schedule.....	15
10.	A.T.P. EUROPE REGULATION EXTRACT	15
11.	24H ASSISTANCE	15



1. DESCRIPTION & IDENTIFICATION

Keep the fold out sheet while reading the instructions.

1.1. Nameplate

Each unit is identified by a nameplate attached to the frame of the unit. The nameplate identifies the complete model number of the unit, the serial number and some other information.

If a problem occurs, please refer to the information on this plate, and make a note of the model and serial number before calling for assistance. This information will be needed when you contact a technician so that he may properly assist you.

The complete nameplate (1a) is fixed on the frame and the Serial Number is fixed on the control box (1b).

1.2. Noise level sticker

This sticker indicates the noise level guarantee in Lwa (sound power level).

Unit	Maximum Sound Power level L _{WA} (dB)
V1550	98
V1550 Low Noise	96
V1550 City	95
V1950	103
V1950Mt*	
V1950 Low noise	101
V1950Mt*Low noise	

2. SAFETY

This manual contains safety and service instructions to follow in order to prevent any accident. Some of following stickers have been placed on the product for your SAFETY.



BEFORE USING THIS REFRIGERANT UNIT, read carefully all safety information explained in this manual and indicated on the product. Be sure that everybody who will use this refrigeration unit has been trained to use it in a safe way.

DURING THE USE OR MAINTENANCE OF THIS REFRIGERATION UNIT, the notes on safety are to be considered.

	Personal protective equipment : Before doing anything on this refrigerant unit, ALWAYS use tools and Personal Protective Equipment in accordance with Carrier Log-out/Tag-out procedure (CTE mandatory Fatality Prevention Review: LO/TO and Electricity). . Hearing protection is recommended when unit is running.
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	Working at height : Take all necessary safety precautions in accordance with regulations in force
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	when accessing this refrigeration unit: use safe ladders, working platforms with appropriate guards.
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	Automatic start : This refrigeration unit is equipped with Auto-Start/Stop, a valuable fuel saving feature. Before servicing refrigeration unit, ALWAYS implement Carrier Log-out/Tag-out procedure (CTE mandatory Fatality Prevention Review: LO/TO and Electricity). - the negative battery cable in diesel mode - the electrical plug in electrical mode
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	Belts and fans : This refrigeration unit is equipped with Auto-start/stop, it may start at any time and without warning. When the unit is running beware of belts and fans that are moving. Before servicing or doing anything on this refrigeration unit, ALWAYS implement Carrier Log-out/Tag-out procedure (CTE mandatory Fatality Prevention Review: LO/TO and Electricity). Ensure the unit will not restart. Lock-out / Tag-out can be performed as described above. When there is protective structure (fan grid or guard for example) make sure they are in place. Never removed them when the refrigeration unit is running. Always keep your hands, body parts, clothes, hairs and tools far from moving parts.
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	Electricity : When this refrigeration unit is running in electrical operation, some devices are powered up especially in the electrical control box. Always use insulated tools relating to maximum voltage and wear individual protecting equipment (EPI) following Carrier Log-out/Tag-out procedure (CTE mandatory Fatality Prevention Review: LO/TO and Electricity). Before servicing refrigeration unit, make sure the main power switch is on the OFF position. Ensure this refrigeration unit is disconnected from the local electrical network. Implement Carrier Log-out/Tag-out procedure (CTE mandatory Fatality Prevention Review: LO/TO and Electricity). Before working in the electrical control box, it is required to control the absence of tension. Ensure that all capacitors (if so equipped) are discharged before service to avoid electric shock. WHEN IT IS NECESSARY TO WORK IN THE ELECTRICAL CONTROL BOX UNDER TENSION, PEOPLE MUST BE QUALIFIED FOR WORKS UNDER LOW OR HIGH VOLTAGE.
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	<p>Power generator :</p> <p>Be aware of HIGH VOLTAGE supplied by the generator as the unit may start automatically</p> <p>Before servicing the unit, make sure the RUN/STOP switch is in the STOP position. Also disconnect the negative battery cable.</p>	  <p>Refrigerant :</p> <p>The refrigerant contained in this refrigeration unit can cause frostbite, severe burns or blindness in case of projection and direct contact with the skin or eyes.</p> <p>In contact with flame or heat, refrigerant generates toxic gas: keep any flame, any lighted object or any source of sparks away from the refrigerant unit.</p> <p>Always use Personal Protective Equipment when handling refrigerant: safety clothes, safety gloves and safety glasses.</p> <p>Refrigerant handling must be done by qualified people.</p>
  	<p>Engine coolant :</p> <p>This refrigeration unit is equipped with a pressurized cooling system. Under normal operating conditions, the coolant in the engine and radiator is under high pressure and very hot.</p> <p>Coolant is very slippery. It can be harmful in case of ingestion.</p> <p>Never remove the cap from a hot radiator when this refrigeration unit is running or immediately after.</p> <p>If the cap must be removed, wait at least 10 minutes and then do so very slowly in order to release the pressure without spray.</p> <p>In case of leakage, immediately clean the floor to prevent slipping.</p> <p>Avoid contact with the skin and eyes. Always use Personal Protective Equipment when handling engine coolant: safety clothes, safety gloves and safety glasses.</p>	<p>FIRST AID</p> <ul style="list-style-type: none"> •General advice: Never get a unconscious person swallow nothing. •Inhalation: Put the victim in the open air. Oxygen or artificial respiration if necessary. Do not administrate adrenalin or similar medicine. •Contact with eyes: very well rinse abundantly with water during at least 15 minutes and consult a doctor. •Contact with skin: wash immediately abundantly with water. •Remove immediately every soiled or splashed clothing <p>Refrigerant Use & Handling</p> <ul style="list-style-type: none"> •Combustibility - Certain HFC & HCFC refrigerants can become combustible when mixed with high concentrations of air at elevated pressures. This not only includes R-22, but also many other HFC & HCFC refrigerants. For example, this is also true of R-134a. •Therefore, these refrigerants should not be mixed with air under pressure for leak testing or other purposes. •Inhalation Hazards - All refrigerants are hazardous if inhaled in concentrations exceeding the recommended safe limits. The symptoms include: headaches, nausea, sleepiness, lethargy, dizziness and loss of coordination. It can result in irregular heartbeat, unconsciousness and even death. The proper remedies should be taken to eliminate or reduce the exposures. •Flame Enhancement - If you see a change in the color or size of the torch flame while welding or soldering in the presence of refrigerant vapors, stop work immediately and ventilate the area. This flame effect only occurs at dangerously high concentrations of refrigerant vapors. This could create the inhalation hazards noted above. •Skin & Eye Protection - Contact with "liquid" refrigerants can result in immediate freezing of the tissues, and permanent damage or blindness can result. DO NOT handle liquid refrigerants without proper personal protective equipment. DO NOT cut into any refrigerant lines under pressure. DO NOT open valves or vent equipment where you may be sprayed with liquid refrigerant.
	<p>Engine :</p> <p>NEVER START THE ENGINE IN A CLOSED ROOM, EXHAUST GAS IS POISONOUS.</p> <p>It is colourless and odourless and created by the incomplete combustion of hydrocarbons.</p> <p>Exhaust gas is poisonous, breathing it induces drowsiness and may lead to loss of consciousness.</p> <p>The following symptoms indicate exhaust gas has been inhaled :</p>	
<p>Blackout, intense headache, sudden weakness and sleepiness, vomiting, muscular contractions, beating temples.</p> <p>If you feel one of the above mentioned symptoms, go out and breathe fresh air.</p> <p>If you notice a noise or modification of the exhaust system, immediately stop the engine and call your service centre for checking and repair.</p>		




	Cooling oil : - avoid prolonged or repeated contact with the skin. - wash carefully after handling.
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	Burning with hot and cold : When this refrigeration unit is running or even after, different components can be very cold or hot (exhaust pipe, tubes, coils, receiver, accumulator or engine for example) Beware when operating closed from cold or hot components. Always use adequate safety gloves when doing any maintenance on this refrigeration unit.
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	Cuttings : Beware when handling or operating closed from parts that could be sharp (coils, evaporators, clamps for example). Always use adequate safety gloves when doing any maintenance on this refrigeration unit.
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	Battery : This refrigeration unit may be equipped with a lead-acid type battery. When charging the battery normally vents small amounts of flammable and explosive hydrogen gas. Projections of acids on the skin or eyes can cause severe burns. Keep any flame, any lighted object or any source of sparks away from the battery elements. Always use Personal Protective Equipment when handling and charging battery: safety clothes, safety gloves and safety glasses. Respect polarity when connecting a battery.
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	CAUTION Under no circumstances should anyone attempt to repair the Logic or Display Boards. Should a problem develop with these components, contact your nearest Carrier Transicold dealer for replacement. Under no circumstances should a technician electrically
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probe the processor at any point, other than the connector terminals where the harness attaches. Microprocessor components operate at different voltage levels and at extremely low current levels. Improper use of voltmeters, jumper wires, continuity testers, etc. could permanently damage the processor.

Most electronic components are susceptible to damage caused by electrical static discharge (ESD). In certain cases, the human body can have enough static electricity to cause resultant damage to the components by touch. This is especially true of the integrated circuits found on the truck/trailer microprocessor.

	Environment : Think about protection of environment during all the life of this refrigeration unit. To prevent environmental damages NEVER release refrigerant in the atmosphere, NEVER throw coolant, oil, battery and chemicals in the nature. It must be recuperate and recycle according to current regulations. When disposing this refrigerant unit do it in an environmentally sound way and in accordance with current regulations.
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2.1. Warning stickers maintenance

- Keep the warning pictograms clean and without any obstruction material.
- Clean the pictograms with water and soap and wipe them with soft fabric.
- Replace damaged or missing pictograms with new pictograms available in Carrier network.
- If a component having a pictogram is replaced by a new one, be sure that the new component has the right pictogram.
- Place a warning pictogram by applying it on a dry surface. Press to external sides to eliminate air bubbles.

3. PRODUCT LOADING

Proper air circulation in the insulated box, air that can move around and through the load, is a critical element in maintaining product quality during transport. If air cannot circulate completely around the load: hot spots or top-freeze can occur.

The use of pallets is highly recommended. Pallets, when loaded so air can flow freely through the pallets to return to the evaporator, help protect the product from heat passing through the floor of the truck. When using pallets, it is important to refrain from stacking extra boxes on the floor at the rear of the truck, because this will cut off the airflow.

Product stacking is another important factor in protecting the product. Products that generate heat, fruits and vegetables for example, should be stacked so the air can flow through the product to remove the heat; this is called "air stacking" the product. Products that do not create heat, meats and frozen products, should be stacked tightly in the centre of the box. All products should be kept away from the sidewalls of the body, allowing air to flow between the body and the load; this prevents heat filtering through the walls from affecting the product.



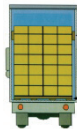
It is important to check the temperature of the product being loaded to ensure that it is at the correct temperature for transport. The refrigeration unit is designed to maintain the temperature of the product at the temperature at which it was loaded; it was not designed to cool a warm product.

SOME ADVICE Before loading

- Pre-cool the inside of the insulated body by lowering the temperature for about 15 minutes.
- Evacuate the humidity existing inside the box by carrying out a manual defrost. This can only take place when enabled by the defrost thermostat (box temperature lower than 3°C during pull down and 8°C during heating).
- Evaporator fans are protected by safety grills. In the event of heavy duty use of the unit, ice can accumulate on the grills. It is therefore recommended to clean them regularly by means of a small brush. The operation MUST be done when the unit has been SHUT DOWN.

When loading

- To be carried out with the unit stopped.
- It is recommended to open doors as little as possible to avoid the intake of hot air and humidity.
- Select the temperature by means of the thermostat, according to the transported goods.
- Check the internal temperature of the goods being loaded (using a probe thermometer).
- Take care not to obstruct the air intakes on the evaporator section and the ventilation ducts.



- Leave a free space of about :
- 6 to 8 cm between load and front wall,
- 20 cm between the top of the load and the roof,
- between the floor and the load (gratings, pallets).

- Do not forget to close the doors.

- Before closing the doors, check your load once more and see that nobody is shut inside the box.



NOTE :
For stationary utilization, we recommend to place the body in the shade.



IMPORTANT
Never leave your unit more than a month without running.

4. RECOMMENDED TRANSPORT TEMPERATURES

Below are some general recommendations on product transport temperatures and operating modes for the unit. These are included for reference only and should not be considered pre-emptive of the set-point required by the shipper or receiver.

More detailed information can be obtained from your Carrier Transicold dealer.

Product	Set point range	Operating mode*
Bananas	15°C (60°F)	Continuous
Fresh fruits and vegetables	+4°C to +6°C (+39°F to +43°F)	Continuous
Fresh meats and seafood	+2°C (+36°F)	Auto-Start/Stop or continuous
Dairy products	+2°C to +6°C (+36°F to +43°F)	Auto-Start/Stop or continuous
Ice	-20°C (-4°F)	Auto-Start/Stop
Frozen fruits and vegetables	-18°C (0°F)	Auto-Start/Stop
Frozen meats and seafood	-20°C (-4°F)	Auto-Start/Stop
Ice cream	-25°C (-13°F)	Auto-Start/Stop

* During delivery cycles that include frequent stops and door openings, it is recommended that the unit always be operated in the continuous run mode to help insure product quality

It is essential to shut down the compartment during the periods when the doors are open, in order to maintain the temperature of the cargo in the other compartments and keep the unit operating correctly.



5. 12VDC BATTERY SAVING RECOMMENDATION

- You are reminded to disconnect the battery when the refrigeration unit is not in use.
- Note that you need to run the unit for at least 72 minutes to charge the battery from 80% state of charge to 100%.
- It is recommended to run the unit in continuous mode for 3 hours if it is parked with options connected to the battery.

6. PRETRIP INSPECTION

The pre-trip inspection should be performed before picking up any load. This inspection is essential to anticipate and help minimize the possibility of "on-the-road" problems. These checks take only a few minutes.

To initiate a pretrip:

- Switch ON the unit.
- Press the SELECT key () until Pretrip appears in the message centre.
- Press the EQUAL key () to start Pretrip.



7. Description

Keep the fold out sheet while reading the instructions.

7.1. Display

1. Compartments ON/OFF switch for Vector 1950 Mt° only	
2. Mode lights	
3. Display	
- VECTOR 1550/1950: Box T° is displayed in °C or °F (depending on configuration). - VECTOR 1950 Mt°: Box T° displayed is C1 (comp.1), C2 (comp.2) or C3 (comp.3) 5 seconds alternative.	
4. Up and down arrow keys	
5. Equal key	
6. Message centre	
7. Manual defrost key	
8. Alarm key	
9. Start/stop-continuous key	
10. Select key	
11. Run/Stop switch	
12. Standby/Engine switch	
13. Language switch	

7.2. Auxiliary control panel

User-friendly indicator and operator control panels clearly show individual compartment temperatures with easy-to-read displays.

From this optional control panel, you can : switch on the unit, check compartment 1, 2 or 3 temperatures, change set points, energize a manual defrost.

These compact panels can be mounted to suit the individual operator's preferences.

14. Compartment on/OFF key	
15. Control panel power on	
16. Unit ON/OFF key	
17. Manual defrost key	

18. Control panel locking**19. Up and down arrow keys****20. Heating operating mode light of a compartment****21. Cooling operating mode light of a compartment****22. Temperature indicated in °C or °F****8. OPERATION****8.1. To start the unit – ROAD operation**

- To power up the unit, place the ENGINE / STANDBY switch (12.) to ENGINE.
- Place the desired compartment switch (1.) to ON (for VECTOR 1950 Mt°).



IMPORTANT – Vector 1950 Mt°
If no compartment is selected, the unit will not start !

- Place the RUN / STOP switch (11.) on the microprocessor controller to RUN.
- Toggle the LANGUAGE switch (13.) to select 1 of the available languages: English - French - Spanish - German - Danish - Dutch - Italian - Russian - Polish - Portuguese - Swedish - Greek - Finnish and Romanian.

8.2. To start the unit – STANDBY operation

1. Check that the unit is connected to a suitable electricity supply (See section 8.2.1)

- To power up the unit, place the ENGINE / STANDBY switch (12.) to STANDBY.
- Place the desired compartment switch (1.) to ON (for VECTOR 1950 Mt°).
- Place the RUN / STOP switch (11.) on the microprocessor controller to RUN.
- Toggle the LANGUAGE switch (13.) to select 1 of the available languages: English - French - Spanish - German - Danish - Dutch - Italian - Russian - Polish - Portuguese - Swedish - Greek - Finnish and Romanian.

NOTE: The unit is fitted with an automatic phase reverser. In all cases, the electric motor will run in the correct direction.

8.2.1. Standby operation guideline

For safe, reliable operation in Standby mode, it is important to consider the following guideline:

- ALWAYS check** that the unit is OFF (Cab command) before connecting or disconnecting it from the power source.
- The extension cable and fuse used for network connection must comply with the legislation currently applicable on the



site of use (minimum H07 RNF CEI 245-4) and with the unit specifications as described in the table below:

Fuse aM 400 / 3 / 50 Hz aM: Motor rated fuse	Standardized extension cable H.07.RNF
32 A	400 V 6 mm ²

- c) The unit connection cable must be fitted with a ground connection. The cable must be connected to earth.
- d) On the 400 V supply, the unit **MUST BE CONNECTED** to a high sensibility (30mA) differential protection.
- e) When performing service and/or maintenance procedures on a refrigeration unit, implement Carrier Log-out/Tag-out procedure (*CTE mandatory Fatality Prevention Review: LO/TO and Electricity*).
- f) Operations on the 400 V supply for the unit must only be carried out by authorized personnel.
- g) The user is liable for ensuring that the above measures are taken.

8.3. To stop the unit

To stop the unit, place the RUN / STOP switch (11.) on the microprocessor controller keypad to STOP.

IMPORTANT – Vector 1950 Mt*

If all compartments are stopped, the unit will stop but the microprocessor will stay energized.

8.4. To change operating mode

To optimize the operating mode, 3 different sets of configuration are available on Vector unit:

- **OptiCOLD**: recommended for sensitive products associated with continuous run mode
- **EcoFUEL**: recommended for any other kind of products
- **customized**: the 6 parameters below can be adjusted according to customer needs.

	OptiCOLD mode (factory set by default)	EcoFUEL mode
Ecomode	No	Yes
Perish minimum Off Time	20 min	30 min
Perish override T°	3°C	4°C
Frozen minimum Off Time	30 min	45 min
Frozen Override T°	4°C	5°C
High Speed Pulldown	Yes	No

1. Press the SELECT key (SELECT) until the operating mode appears in the message centre.
2. Press UP (UP) or DOWN (DOWN) arrow to select OptiCOLD, EcoFUEL or customized.
3. Press the EQUAL key (EQUAL) to validate selected configuration.

62-61773-03



8.5. To operate in "CITY mode" – V1550 City only

Only Vector 1550 City can operate in City mode. Vector 1550 City are delivered as standard with City mode activated.

CITY mode enables the unit to operate in low noise emission (60dB) in low speed and standby operation.

Thanks to COLDTouch or via unit display, operator can deactivate City mode.

Deactivating or activating the City mode is under user responsibility.



8.5.1. CITY mode description

3 configurations are available for CITY mode:

- Automatic mode (factory setting)
- Manual mode
- Timer mode

Automatic mode

- The unit starts in city mode.

- Activate/disable CITY function can be done at any time using "ON" / "OFF" button on COLDTouch (F4).

- The unit will automatically exit CITY mode (engine low speed) and run in standard mode (engine high speed) if box T° exceeds temperature delta defined around set point in order to protect goods integrity.

Remark: Temperature delta is defined via "Perishable/frozen override T°" and can be adjusted (see chapter 7.4).

Manual mode

- The unit starts in City mode.

- Activate/disable CITY function can be done at any time using "ON" / "OFF" button on COLDTouch (F4).

Timer mode

- The unit starts in City mode.

- In Timer mode, the CITY function is active during a specific time range. Outside this specified time range, the unit will switch in standard mode.

- Activate/disable CITY function can be done at any time using "ON" / "OFF" button on COLDTouch (F4).

8.5.2. CITY mode selection

To select AUTOMATIC, MANUAL or TIMER mode:

- Press the SELECT key (SELECT) until "PRESS ↑↓ TO VIEW SETTINGS" appears in the message centre.

- Press UP () or DOWN () arrow to select CITY mode:



"CITY MODE SEL: AUTO"
"CITY MODE SEL: MANUAL"
"CITY MODE SEL: TIMER"

will be displayed in the message center.

- Press the EQUAL key () to validate selected configuration.

If "CITY MODE SEL: TIMER" is selected, you have then to configure the time frame:

- Press the SELECT key () until "PRESS ↑↓ TO VIEW SETTINGS" appears in the message centre.

- Press UP () or DOWN () arrow to select "CITY MODE START".

- from 00:00 to 23:50 (10mn increment)

- Press the EQUAL key () to validate selected configuration.

- Repeat the sequence to configure "CITY MODE END".

8.5.3. CITY mode activation

From the COLDTouch



Press **F4** from main menu to switch from CITY mode to standard mode ("OFF") or standard mode to CITY mode ("ON").



60db 

Is displayed when you switch to standard mode to City mode.



Is displayed when you switch CITY mode to standard mode.



Note: The hourglass will disappear when the unit is in desired mode.

IMPORTANT

Activate or disable CITY mode while unit starts or reaches set point can take few minutes due to priority system operations.

From the unit display

- Press the SELECT key () until "PRESS ↑↓ TO VIEW CITY MODE" appears in the message centre.

- Press UP () or DOWN () arrow to select "CITY MODE ON" or "CITY MODE OFF".

- Press the EQUAL key () to validate selected configuration.

NOTE

At any time, CITY mode can be overridden through COLDTouch or Vector display.



If CITY mode is "ON" :


"STATUS OK – CITY mode low speed" is displayed in unit message center.
"60dB" is displayed on COLDTouch screen.

If CITY mode is "OFF" :

"STATUS OK" is displayed in unit message center.
- Blank window rather 60dB is displayed on COLDTouch screen.

8.6. To initiate manual defrost

The defrost mode may be initiated in three different ways if the evaporator coil is below 4.5°C (40°F):

1. Defrost is initiated automatically at preset intervals by defrost timer in the microprocessor.
2. Defrost is initiated by the defrost air switch.
3. The defrost mode may be manually initiated by pressing the Manual Defrost Key (). The DEFROST Light will come on and the message centre will display "DEFROST CYCLE STARTED" for 5 seconds.

IMPORTANT – Vector 1950 Mt°

All compartments will defrost at the same time.

If "CANNOT START DEFROST CYCLE" is displayed, the coil temperature is above 4.5°C (40°F). Run the unit to lower temperature below 4.5°C (40°F) and then restart defrost.



- All defrost modes with heater bars terminate when the evaporator temperature is higher than 12.5°C (55°F).
- Natural defrost mode terminates when Return Air Temperature is equal to Supply Air Temperature.
- For VECTOR 1950 Mt°: the defrost mode terminates when the evaporator temperature of EACH COMPARTMENT is higher than 12.5°C (55°F).
- Should the defrost cycle not complete within 45 minutes, the defrost cycle is terminated. "A54-DEFROST NOT COMPLETE" will be in the Message Centre.



- After the 45 minute termination, the controller will wait 1.5 hours before attempting another defrost cycle. Pressing the manual defrost key will override this mode and start a new 45 minute defrost cycle. Overriding this 1.5 hour waiting period will generate an alarm.
- If a shutdown alarm occurs, defrost will be terminated.

8.7. To change set point temperature

1. For VECTOR 1950 M*: Wait the display of the compartment for which you want to modify the set point.

2. With the set point displayed, press the UP () or DOWN () ARROW key to change set point to the desired value.

The display will flash to indicate that the set point reading being displayed is a non-entered value.

The message centre will show "↑↓ TO SCROLL, THEN = TO SAVE". The set point display will flash for 5 seconds of until the EQUAL key is pressed.


3. Press the EQUAL/ENTER () key to save the new set point.

4. Verify that the message "SET POINT CHANGED" is displayed on the message centre for 15 seconds.

Remarks :

- Set points of -30°C to +32°C (-22°F to +89°F) may be entered via the keypad. The controller always retains the last entered set point in memory.

-Set point can not be changed when unit is in Pretrip or when viewing Alarm List, Data List or Functional Parameters.

-Depressing the EQUAL key () will cause the new displayed set point value to become active. If the display is flashing and the new value is not entered, after 5 seconds or no keyboard activity, the display will flash for 15 seconds with "SET POINT NOT CHANGED" displayed and then revert back to the last set point. All other keys are active at this time and may be pushed while the display is flashing.



TIP

You may press and hold the UP or DOWN arrow key to change the set point. The longer the key is held, the faster the setting will change.

8.8. Start-Stop operation

1. Press the START/STOP CONTINUOUS key () until the START/STOP Light (2.) on the controller illuminates.

2. Verify that "START/STOP MODE SELECTED" is displayed on the message centre for 5 seconds and that the START/STOP Light is illuminated. The unit is now in Start-Stop operation.

8.8.1. Start-Stop operation – Road / Standby modes

The system works as follows:

- Engine preheat and start-up are automatic.

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- When the temperature(s) selected with the thermostat(s) has been reached, the system shuts the unit down.
- Unit shut-downs can be programmed. Shut-down times will be modified depending on the isothermal insulation of the box, the ambient temperature and the cargo. The shut-down time is pre-programmed in the plant.

The user should determine whether this setting is appropriate for his type of cargo and the insulation of the bodywork (all adjustments are to be made by a Carrier Transcold technician).

CAUTION



During unit shut-downs, the evaporator fans also stop. Only use this operating mode for products which tolerate shut-downs of this kind.

- devices which ensure it operates correctly. These check:
 - the battery status
 - the temperature of the engine water
 - the minimum run time

- Automatic start/stop is provided to permit starting/restarting of the compressor as required. This gives the microprocessor automatic control of starting and stopping the unit. The main function of automatic start-stop is to turn off the refrigeration system near the set point to provide an energy efficient temperature control system and then restart the unit when needed. Start-stop operation is normally used for frozen loads only.

- If pressing the START/STOP CONTINUOUS key seems to have no effect, this key may be locked out. START-STOP and CONTINUOUS operation may be tied to the set point ranges for frozen and perishable loads.


- If the unit fails to start, shuts down on a safety, or fails to run for the minimum run time, three consecutive times, the "Auto-Start/Failure" is activated.

- The microprocessor controller monitors box temperatures, battery voltage and current, and engine coolant temperature. Once set points are reached the controller will shut off the diesel engine to conserve fuel. The controller will not shut off the engine if the battery voltage is not sufficient to restart it.

- Safety conditions to restart the unit if the box temperature is:

-more than +6°C (+11°F) (programmable) over set point,
 -the battery voltage drops below 12.2 VDC, or if
 -the engine coolant temperature drops below +0°C.

8.9. Continuous run operation

1. Press the START/STOP CONTINUOUS key () until the CONTINUOUS RUN Light (2.) on the controller illuminates.

2. Verify that "CONTINUOUS RUN MODE SELECTED" is displayed on the message centre and that the CONTINUOUS RUN Light is illuminated. The unit is now in Continuous Run operation.

Remarks:

- In the continuous run mode, the diesel engine will not shut down except for safeties or if the engine stalls. Continuous Run operation is normally used for perishable loads.



- If pressing the START/STOP CONTINUOUS key seems to have no affect, this key may be locked out. Start-Stop and Continuous operation may be tied to the set point ranges for frozen and perishable loads.

8.10. Pretrip

The PRETRIP mode is for checking unit operation and evaluating operation of all modes and indicating a failure when detected.

The message centre displays the current test and the % complete of the test. When the Pretrip tests are complete the message centre will display "PRETRIP PASS" or "PRETRIP FAIL IN TEST<test number>". If "PRETRIP FAIL IN TEST<test number>" is displayed the ALARM light will flash. Press the ALARM LIST key to review the alarms set by the Pretrip tests.



Once Pretrip is started, the control panel keys are disabled until the Pretrip ends.

1. Press the SELECT key () until "PRESS = TO START PRETRIP" is displayed.
2. Press the = key () to start PRETRIP.
3. Verify that the display shows "TEST#".





8.11. Trip start

Trip start marks a time stamp in memory to allow easy review of the data from the last trip.










This function tells the recorder that the present date and time is beginning of a new trip.

1. To mark the start of a trip in the data recorder, press the SELECT key () until "PRESS = TO MARK TRIP START" is displayed.
2. Press the = key ().
3. If trip start is acknowledged by the data recorder, "TRIP START ENTERED" will be displayed for 5 seconds and then the display will revert back to the normal display. Otherwise "CANNOT ENTER TRIP START" will flash and then the display will revert back to the normal display.

8.12. To display unit data

1. Press the SELECT key () until "PRESS ↑↓ TO VIEW DATA" is displayed.
2. Press the = key () to enter unit data menu.
3. Press UP () or DOWN () arrow to display the requested data.

8.13. To change a function

1. Press the SELECT key () until "PRESS ↑↓ TO VIEW SETTINGS" appears in the Message Centre.
2. Press the UP () or DOWN () arrow to scroll through the Function List beginning at the top or the bottom.
3. "↑↓ TO SCROLL, THEN = TO SELECT" will appear in the Message Centre.
4. To read through the Function List, continue to press either the UP or DOWN ARROW key. The Functional Parameters will appear in the Message Centre in the order as shown below. The list is circular meaning that once the end is reached, it is repeated from the beginning. If no key presses are made for 10 seconds, the Message Centre will return to the default message.
5. To change one of the Functions, bring the Function you wish to change into the Message Centre and press the EQUAL () key "↑↓ TO SCROLL, THEN = TO SAVE" will appear in the Message Centre.
6. Press either UP () or DOWN () ARROW key to begin to change the Function setting. The Message Centre will flash, indicating that a change has been made that has not been entered into memory.
7. Continue pressing UP () or DOWN () key until the desired value is showing, then press the EQUAL () key. The Message Centre will stop flashing. The new value is now in memory.

CAUTION



If the  key is not pressed within 10 seconds, the Message Centre will change to "FUNCTION NOT CHANGED". This will appear for 5 seconds, then return to the last Functional Parameter shown. If no further keys are pressed, the default display will return in another 10 seconds.

Functional parameter	Available selection
Selection in BOLD are the factory settings	
"DEFROST TIMER SET FOR"	1.5 hrs / 3 hrs / 6 hrs / 12 hrs
"SET S/S PARAMETERS:" (These may be displayed individually (8 parameters) as PERISH and FROZEN, or combined (4 parameters) with no designation.)	
"PERISH MIN RUN TIME:" "FROZEN MIN RUN TIME:"	4 mins to 60 mins (in 1 minute increments)
"PERISH MIN OFF TIME:" "FROZEN MIN OFF TIME:"	10 mins to 90mins 20 mins – PERISH 30 mins – FROZEN (in 1 minute increments)
"PERISH OVERRIDE TEMP:"	2°C to 10°C




"FROZEN OVERRIDE TEMP.:"	(38.5°F to 50°F) 3°C (37°F) – PERISH 4°C (40°F) – FROZEN (in 0.5°C increments)
"PERISH MAX OFF TIME:" "FROZEN MAX OFF TIME.:"	OFF / 10 mins to 255mins (in 1 minute increments)
"FROZEN SHUTDOWN:" "OFFSET.:"	0°C to 2°C (32°F to (38.5°F)
"PERISH SENSITIVE PRODUCT	ON / OFF
"TEMP CONTROL.:"	"RETURN AIR" / "SUPPLY AIR"
"DISPLAY PRESSURE IN"	PSIG / BARS
"DISPLAY TEMP IN"	"°C" / "°F"
"ECO MODE"	YES / NO
* "SET PM HOURMETERS.:"	
"ENGINE" "SWITCH ON" PM 1 thru PM 55	ON / OFF / RESUME / RESET-
"STANDBY" "SWITCH ON" PM 1 thru PM 55	ON / OFF / RESUME / RESET -
"OUT OF RANGE ALARM.:"	OFF / 2°C (4°F) / 3°C (5.5°F) / 4°C (7°F)
"C2 OUT OF RANGE ALARM.:"	OFF / 2°C (4°F) / 3°C (5.5°F) / 4°C (7°F)
"C3 OUT OF RANGE ALARM.:"	OFF / 2°C (4°F) / 3°C (5.5°F) / 4°C (7°F)
" LOW SPEED START UP : S/S	OFF / 255 Min : 1min increment




" LOW SPEED START UP : CONTINUOUS	OFF / 255 Min : 1min increment
"SILENT MODE"	NO / YES
"SLEEP MODE.:"	NO / YES
* "OVERRIDE DOOR SHUTDOWN.:"	NO / YES
* "OVERRIDE REMS1 SHUTDOWN.:" * "OVERRIDE REMS2 SHUTDOWN.:"	NO / YES
"NO POWER-SWITCH TO DIESEL.:"	NO / YES
* This Functional Parameter may not appear in the list for your unit, depending on microprocessor configuration.	

Unit problems detected by the controller are stored in the Alarm List in the controller. Stored alarms may be viewed in the Message Centre.

All most times, the "STATUS OK" message will be shown in the Message Centre.

- Press the ALARM LIST key (). If there are no active alarms in the alarm list, the message "NO ACTIVE ALARMS" will be displayed for 5 seconds.

If there are active alarms in the alarm list, the display will be "A" and the alarm message for the latest active alarm in the list for 5 seconds.

- Press the UP () or DOWN () key to scroll through the alarm list.
- When you reach the end of the alarm list, "LIST END, = TO CLEAR ALARMS" is displayed.
- If the alarm list is full, the "A" and the alarm message for the latest alarm is displayed for 5 seconds, then "LIST END, = TO CLEAR ALARMS" is displayed for 5 seconds.
- To deactivate the active alarm list, press the EQUAL key () while "LIST END, = TO CLEAR ALARMS" is being displayed.



TIP
To deactivate active alarms, turn the controller OFF and then back ON using the RUN / STOP switch.

8.13.1. Alarm list

If there is a safety shutdown, "UNIT SHUTDOWN-SEE ALARM LIST" will be shown.

Pressing the ALARM LIST key () will bring any Active Alarms into the Message Centre. The following are the Shutdown Alarms that may appear:








Alarm message	status
√: alarm only X or √: depends on the configuration X: Shutdown	
Driver alarms	
"2-LOW ENGINE OIL LEVEL" (option)	X or √
Shutdown alarms	
"11-LOW ENGINE OIL PRESSURE"	
"12-HIGH COOLANT TEMPERATURE"	X or √
"13-HIGH DISCHARGE PRESSURE"	X
"14-ELECTRIC CIRCUIT"	X
"15-BATTERY VOLTAGE TOO HIGH"	X
"16-BATTERY VOLTAGE TOO LOW"	X
"17-HIGH COMP DISCHARGE TEMP"	X
"18-LOW REFRIGERANT PRESSURE"	X or √
"19-LOW FUEL SHUTDOWN"	X or √
"22-LOW SUCTION SUPERHEAT"	X
"23-A/C CURRENT OVER LIMIT"	X
"27-HIGH SUCTION PRESSURE"	X or √
"28-CHECK REFRIGERATION SYSTEM"	X or √
Start up engine alarms	
"30-FAILED TO RUN MINIMUM TIME"	X
"31-FAILED TO START-AUTO MODE"	X
"32-FAILED TO START-MANUAL"	X
"39-CHECK ENGINE RPM"	X or √
"35-CHECK STARTER CIRCUIT"	X or √
"41-ENGINE STALLED"	X
Warning status alarms	
"51-ALTERNATOR NOT CHARGING"	X or √
"62-C2 BOX TEMP OUT-OF-RANGE" -V1950 Mt°	X or √
"63-C3 BOX TEMP OUT-OF-RANGE" -V1950 Mt°	X or √
Electrical alarms	
"73-NO POWER- CHECK POWER CORD"	X
"74-AC PHASE REVERSED"	X or √
"75-COMP MOTOR OVERHEATED"	X
"76-CONDENSER MOTOR OVERHEATED"	X



"77-EVAP MOTOR OVERHEATED"	X
"98-CHECK HIGH TEMP THERMOSTAT"	X both electric heater
Sensor alarms	
"122-CHECK RETURN AIR SENSOR"	X
"123-CHECK SUPPLY AIR SENSOR"	X
Microprocessor alarms	
"232-SETPOINT ERROR"	X
"233-MODEL # ERROR"	X
"237-FUNCTION PARAMETER ERROR"	
"238-CONFIGURATIONS ERROR"	X
"242-DIS PRESS CALIBRATE ERROR"	X
"243-SUCT/EVAP CALIBRATE ERROR"	X
"244-ECONO CALIBRATE ERROR"	X
"245-CAN NOT SAVE SETTING"	X
"246-EEPROM WRITE FAILURE"	X
"248-CONFIG MODE / HP2 ERROR"	X
"249-MICROPROCESSOR ERROR"	X

8.14. To operate with auxiliary control panel

1. Start the unit as mentioned before.
2. Press the SYSTEM ON/OFF key (16). Power light will go ON.
3. Press the ON/OFF key (14) to energize selected compartment.
4. Display

	waiting for communication with unit
	compartment temperature display
	set point temperature display
	evaporator status (heat or cool or null)
	compartment shut-down via remote control
	defrost compartment
	temperature sensor malfunction

8.14.1. To change the set point

Set point change can be made from control panel or cab control.

1. Press the UP or DOWN ARROW key (19) to increase or decrease set point. This is the same operation for each compartment.

8.14.2. To set pre-set set point

The control panel allows the user to pre-set 5 different temperatures on each compartment.

1. Switch main RUN/STOP switch (11) and required remote compartment switches (14) on the unit to RUN.
2. Press Carrier logo and the lock light will be displayed.

3. Press host compartment UP ARROW key for 10 seconds. P1 will be displayed in all compartments. Set lowest set point temperature required.
4. Press Carrier logo and P2 will be displayed. Set next lowest temperature required up to five pre-set set points are available.
5. Pressing the second compartment up or down arrow will allow the lowest temperature required to be preset in the second compartment. Pressing Carrier logo will then move on to the next lowest (up to five).
6. Press the Carrier logo for 10 seconds and this will remove the lock light and store the pre-set set points in memory.

8.14.3. To remove pre-set set point

1. Switch main RUN/STOP switch and required remote compartment switches on the unit to RUN.
2. Press Carrier logo and the lock light will be displayed.
3. Press host compartment up arrow for 10 seconds. P1 will be displayed in all compartments.
4. Set temperature to lowest possible and OFF will be displayed.
5. Press the UP ARROW key on remote compartments will display the presets, take the temperature to the lowest possible and OFF will be displayed.
6. Press the Carrier logo for 10 seconds and the new information will be stored in memory.

8.14.4. To lock and unlock the control panel

1. Press the CARRIER logo 10 seconds to lock the control panel.
2. Then, starts to flash in the new logic.
3. Press again the CARRIER logo 10 seconds to unlock.
4. The indicator goes off.

NOTE

- When unit is turned OFF remotely from control panel, after two hours, it will automatically stop.
 - A cycle power with the RUN/STOP switch (11) must be done to restart the unit.
 - On Vector Mt® units, when all compartments are switched OFF from the compartment ON/OFF switches (1), after two hours, the control panel will automatically stop and at the same time switch OFF the unit.
 - A cycle power with R/S switch (11) must be done to restart the unit.

NOTE

It is not necessary for the compartment to be running in order to modify or see the set point value and the temperature of the compartment. The unit can be shut down both with the control panel and the general switch.

9. MAINTENANCE

A comprehensive maintenance program will help to insure that the unit continues to operate reliably. Such a maintenance program will also help to control operating costs, increase the unit's working life, and improve performance.

NOTE

All maintenance services must be done by a technician trained on Carrier products respecting all safety and quality standards of Carrier.



9.1. Maintenance schedule

Vector 1550 / 1950 & 1950 Mt*			
Hours	Initial service	Service A	Service B
400	■		
1500		■	
3000		■	■
4500		■	
6000		■	■
7500		■	
9000		■	■
10500		■	
12000		■	■

10. A.T.P. EUROPE REGULATION EXTRACT

(Date: March 1974)

Approval of vehicles intended for the carriage of perishable goods.

Before putting a refrigerated vehicle into service, it is necessary to have it approved by the Regional Health Department.

Characteristics of vehicles used for carrying perishable goods; refrigeration unit.

The refrigeration unit is an insulated unit with a cooling system which makes it possible, with a mean outside temperature of +30°C, to lower the temperature inside the empty body and to maintain this low temperature in the following way:

class A : Refrigeration unit furnished with a cooling system whereby a temperature between +12°C and 0°C inclusive can be chosen.

class B : Refrigeration unit furnished with a cooling system whereby a temperature between +12°C and -10°C inclusive can be chosen.

class C : Refrigeration unit furnished with a cooling system whereby a temperature between +12°C and -20°C inclusive can be chosen.

The cooling capacity of a unit is determined by a test carried out in one of the approved testing stations and ratified by an official report.

Note: The "K" factor of bodies intended to be classified as C must be equal to or lower than 0.4 W/m² °C.

Signs, identification marks and plates to be attached to refrigeration units

Refrigeration Plate

This reference must be followed by identification marks according to the following list:

Standard refrigeration unit Class A	FNA
Reinforced refrigeration unit Class A	FRA
Reinforced refrigeration unit Class B	FRB
Reinforced refrigeration unit Class C	FRC

In addition to the above identification marks, the date (month and year) of expiry of the approval certificate must be indicated.

Example:
FRC 6-2012
(6 = month (June) 2012 = year)

Very important

Regularly check the expiry date of the approval certificate. During transport, the approval certificate or provisional certificate should be shown on request of qualified agents. To have an insulated unit approved as a refrigeration unit, an application to modify the approval certificate should be sent to the regional health office.

11. 24H ASSISTANCE

At Carrier Transicold we're working hard to give you complete service when and where you need it. That implies a worldwide network of dealers and available an emergency service. These service centres are manned by factory-trained service personnel and backed by extensive parts inventories that will assure you of prompt repair.

Should you encounter a unit problem with your refrigeration unit during transit, follow your company's emergency procedure or contact the nearest Carrier Transicold service centre. Consult the directory to locate the service centre nearest you. This directory may be obtained from your Carrier Transicold dealer.

If you are unable to reach a service centre, call Carrier Transicold's 24Hour Assistance:

In Europe, please use the following free phone numbers from:

A	AUSTRIA	0800 291039
B	BELGIUM	0800 99310
CH	SWITZERLAND	0800 838839
D	GERMANY	0800 1808180
DK	DENMARK	808 81832
E	SPAIN	99 993213
F	FRANCE	0800 913148
FIN	FINLAND	0800 113221
GB	GREAT BRITAIN	0800 9179067
GR	GREECE	00800 3222523
H	HUNGARY	06800 13526
I	ITALY	800 791033
IRL	IRELAND	1800 553286
L	LUXEMBURG	800 3581
RUS	RUSSIA	810 800 200 31032
N	NORWAY	800 11435
NL	THE NETHERLANDS	0800 0224894
P	PORTUGAL	8008 32283
PL	POLAND	00800 3211238
S	SWEDEN	020 790470

From other countries / Direct : +32 9 255 67 89

In Canada or United States, call 1 - 800 - 448 1661



When calling, please have the following information ready for fastest service:

- Your name, the name of your company, and your location
- A telephone number where you can be called back
- Refrigeration unit model and serial number
- Box temperature, set point and product
- Brief description for the problem you are having and what you have already done to correct the problem.

We will do everything we can to get your problem taken care of and get you back on the road.

